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MIGRATION OF RICHARDSON'S GROUSE.

BY A. W. ANTHONY.

IT WAS recently my fortune to spend several months within the range of Richardson's Grouse, and to witness its very extensive migrations to and from its breeding grounds, migrations so dissimilar to anything with which I am familiar in the other closely allied species, I have thought my notes on the subject worthy of record.

In order that the character of the migration may be more fully understood, it is necessary that I give a somewhat detailed description of the region over which my observations extend.

The mining camp of Sparta, which was the base of my operations, lies at the lower edge of the pine belt at 4100 feet altitude at the base of the Powder River Mountains and about fifteen miles west of Snake River in eastern Oregon.

North of the camp, the ridges, which for the most part trend north and south, are cut by the deep cañon of Eagle Creek. Running easterly, cutting a gap in the heavy growth of pine, tamarack and fir, of from five hundred to one thousand feet in depth and half a mile in width north of the Eagle, the ridges of the main range rise to approximately eight thousand feet above the sea, dividing the waters of Powder River from those of the Wallow. In these higher altitudes is found the true home of Richardson's, Franklin's and the Gray Ruffed Grouse.

South of Sparta the country falls away rapidly in a series of sage-covered benches and ridges to Powder River, from which it rises with equal rapidity to the divide between its waters and those of Burnt River, known locally as the Lookout Mountains.

The higher parts and deeper cañons of this range are well wooded with pine and fir, but from information furnished by the residents, no grouse winter there.

On the first of March, 1902, when the first of the migrating grouse made their appearance along the edge of the timber north of Sparta, the snow was from two to four feet in depth, though the lower slopes near Powder River were bare and had begun to show the first signs of sprouting grass. Snow squalls and rough

weather seemed to check the southward flight until about the 10th, although a few birds were passing over daily. The tracks on the snow bore ample testimony as to the manner in which the migration was made.

From the higher slopes north of Eagle Cañon, the birds sailed until the rising ground brought them to the surface of the snow on the south side of the creek, usually well above the cañon. From this time until the highest point of the ridge south was reached the journey was performed on foot. Immediately north of Sparta lies a conical peak known as Baldy, some seven hundred feet above camp, the highest point in the ridge south of Eagle Creek. From the top of Baldy, and in an area not to exceed one hundred feet square, I think fully eighty-five percent of the grouse passing over Sparta take their departure. From east, north and west up the steep, snowy slopes hundreds of trails led toward the top and not one could be found leading downward. The flight from the top of the peak was almost invariably undertaken at about sunrise or sunset. It is only when birds are disturbed and driven from the peak that they will attempt to cross to the southern ridge during the middle of the day. Throughout the day grouse are arriving along the upper slopes of Baldy, singly, in pairs, and small flocks that have perhaps formed since the southward march began, as I think they do not winter in company, but the flight from the peak is usually in flocks of from a dozen to a hundred birds. Though the ridge south of Sparta is four hundred feet or more lower than the top of Baldy, it is fully a mile and a half distant in an air line, and the flight is seldom sustained to carry the birds to the top. Usually they alight on the snow half way up the slope, and after a few moments' rest, continue the journey on foot; those passing over in the evening spend the night, I think, in the pines, the last of which are seen along this divide; but those arriving in the morning soon pass on, walking down any of the small ridges leading toward Powder River. From the lava cliffs, which form the cañon along this part of the river, they fly across to the lower slopes of Lookout Mountains, up which they walk, continuing the migration as far, at least, as the valley of Burnt River.

On arriving at the first bare ground, gravel is eagerly sought

for, after which the tender green shoots are greedily devoured, and the remainder of the migration is much more leisurely performed.

The first birds which I saw the past spring were males, but I could not be sure that either sex preceded the other in migration. A few birds undoubtedly remain and nest throughout the timbered region of Powder River Mountains, but the percentage is small indeed compared with those that nest on the bare sage plains along Powder and Burnt Rivers. Many of the nests are placed in the shelter of the scattered growth of chokecherry, aspen, or cottonwood that fringes the water courses tributary to the river; and a few of these nests may produce young that reach maturity, but fully as many birds lay in the shelter of a bare rock, or scanty sage brush in the open plain, in company with Sage Grouse; and fortunate indeed is the bird, nesting in such location, that raises its young. In a circuit of not over six miles from my camp on Powder River the past May, were ranged not less than twenty thousand sheep which tramped out the nests so completely, that, while finding dozens of broken nests, I saw not one that had not been destroyed, of either Richardson's or Sage Grouse, and only one young bird. Nevertheless, many of them do escape, as their numbers testify, although I am told, on good authority, that there are very few in comparison with their former numbers.

The love note of the male Richardson's Grouse bears no resemblance to that of its near kinsman, the Sooty Grouse of the Cascade and Coast Ranges. From a perch in a tall fir, the latter utters a series of hoots, deep and throaty, while the subject of the present sketch has, so far as I have heard, but a single nasal toot, loud and far reaching. When uttered the bird is usually strutting on the ground before a member of the gentle sex, with the tail spread and elevated and the wings drooping, resembling nothing so much as a turkey gobbler in miniature. The note is uttered as, with lowered head and threatening mien, he rushes at the hen, or perhaps at an intruding rival.

The return migration is less pronounced in its beginning, and more gradual in its progress. Toward the last of July the broods of well grown young, attended by the adults, begin to appear along the ridges, returning as they came by walking invariably up to the

tops of the hills and ridges and as invariably flying as near to the top of the next as their gradually descending flight will carry them. Before the middle of August, the migration is in full swing, and flocks are seen each evening, passing over Sparta. Frequently they alight in the streets and on the house-tops. I recall with a smile the memory of a flock of a dozen or more which lit one evening in front of the hotel. For a time pistol bullets and bird shot made an accident policy in some safe company a thing to be desired, but strange to relate none of the regular residents of the town were injured. The same may be said of most of the grouse, though one, in the confusion, ran into the livery stable and took refuge in a stall, where it was killed with a stick.

Straggling flocks from south of Powder River prolong the fall migration until near the first of October, after which none are seen below the high elevations north of Eagle Creek.

AN ORNITHOLOGICAL VISIT TO LOS CORONADOS ISLANDS, LOWER CALIFORNIA.

BY J. GRINNELL AND F. S. DAGGETT.

ITINERARY.

TWENTY miles due south of Point Loma, near San Diego, California, and half that distance from the Lower California coast, in Mexican waters, is a group of small islands known as Los Coronados Islands. The group consists of four principal islands with smaller outlying rocks, some of which are only completely separated from the main islands at high tide. The largest, or South Island, is a huge ridge some two miles long and of varying width. The sides are precipitous and impossible to scale except at the few favorable points. The backbone presents an irregular skyline like the back of a dromedary. The southern extremity, about six hundred feet high, ends in a bold promontory. At the north the ridge ends in detached rocks. A cove on the east side, about